

DEPARTMENT OF WATER RESOURCES

DIVISION OF FLOOD MANAGEMENT

P.O. BOX 219000

SACRAMENTO, CA 95821-9000



December 24, 2012

TO: Long Range Weather Forecasting Committee Members

SUBJECT: Winter 2012 Forecasts

I delayed this quarterly letter about 10 days because I thought the December CPC forecasts for the winter might change from the previous one issued November 15, in view of the large storms hitting northern California at the end of November. The winter outlook has now shifted the drier conditions away from northern California to Arizona and New Mexico and also Southern California after January.

Enclosed are the new sets of experimental long-range forecasts for winter and next spring, issued by the National Weather Service (NWS) Climate Prediction Center (CPC), produced on December 20, 2012. For January, the CPC is forecasting near normal temperatures on the west coast, and a wet Pacific Northwest, which shrinks to the northern Rockies later in the winter. The southwestern warmth expands later in the season to most of the southern and eastern states. Although northern and central California are depicted in the near normal precipitation zone, I would be wary because a number of past years which started strongly wet have turned drier after mid winter and many of the signals watched by long range forecasters continue to indicate a dry outlook. However, the short range future for the next 5 days is wet.

Eastern tropical Pacific sea surface temperatures are only a little bit above normal and not expected to rise to El Nino status, but decrease to near normal. So there is a near neutral influence from this source. The Pacific Decadal Oscillation (PDO) was very negative at -2.21 in August, but rose to -0.79 in October (November values are not yet posted by the University of Washington). Last year the PDO stayed strongly negative until February.

I have no new information from Dr. Art Douglas who gave us a dry outlook for winter precipitation last September. However, two of his drivers, ocean coolness between Hawaii and Baja California, and warmer than normal in the Atlantic Ocean off the east coast, are still that way. If I hear back from Dr. Douglas in the next two weeks, I will send his outlook in a supplemental letter.

The next set of maps for winter and spring are from the International Research Institute of Columbia University at Palisades, New York. It is similar to the CPC for the USA (based on the same methodology), but shows other countries in North America. Perhaps the most striking feature is the warm winter in arctic Canada and northern South America.

The drought monitor map is attached near the end of the package. The Great Plains region remains the center of a very large dry area in the nation, including much of the Rocky Mountains.

For California, especially the north, this season has started well, with northern Sierra seasonal precipitation nearly 200 percent of average for this date, and statewide snowpack about 140 percent for the date and about 40 percent of a full April 1 pack. Reservoir storage is near average for this time of the year. Much of this boost came from a strong atmospheric river (sometimes labeled pineapple express) conveying loads of moisture into northern California at the end of November. The northern Sierra 8 station group picked up about 11.5 inches over 4 days, some 23 percent of a normal full season. The San Joaquin 5 station group gained nearly 7 inches in 4 days for a 16 percent chunk of their annual average.

This is the first attempt to send this quarterly product electronically. Let me know if you have any problems reading it.

If you have questions or comments, please feel free to give me a call at (916) 574-2625 or e-mail at mroos@water.ca.gov.

Merry Christmas,

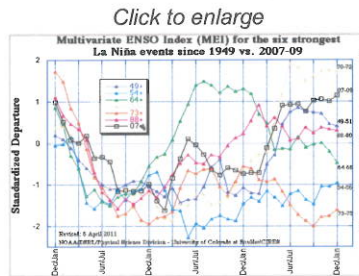


Maurice Roos
Chief Hydrologist (part time)
Division of Flood Management

Attachments

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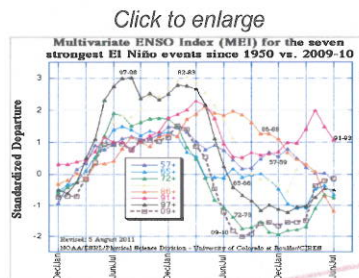
Historic La Niña events since 1950



How does the 2007-09 La Niña event compare against the six previous biggest La Niña events since 1949? This figure includes only strong events (with at least three bimonthly rankings in the top six), as well as the 2007-09 event which reached this threshold twice (rankings are listed [here](#)). La Niña events have lasted up to and over three years since 1949, in fact, they do tend to last longer on average than El Niño events. The longest two events included here covered much of 1954-56 and 1973-75. The longest event not included here occurred in 1999-2001 which reached the 'strong' threshold (top six rankings) just once. By early 2013, I will update this figure to replace 2007-09 with the 2010-12 event. Click on the "Discussion" button below to find the comparison of the weak 2012 El Niño event with historic events.

- [Discussion and comparison of recent conditions with historic La Niña events](#)
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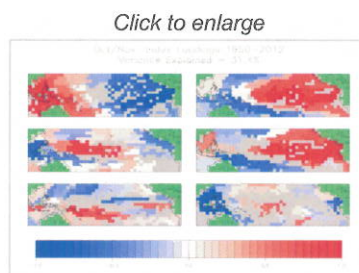
Historic El Niño events since 1950



How does the 2009-10 El Niño event compare against the seven previous biggest El Niño events since 1950? This figure includes only strong events (with at least three bimonthly rankings in the top six), with the exception of the 2009-10 event that reached the top six ranking twice. Compared to the previous version of this figure, 1997-98 now reaches very similar peak values to the 1982-83 event, just above the +3.0 sigma [threshold](#). Click on the "Discussion" button below to find the comparison of the weak 2012 El Niño event with historic events.

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MEI loading maps for the latest season





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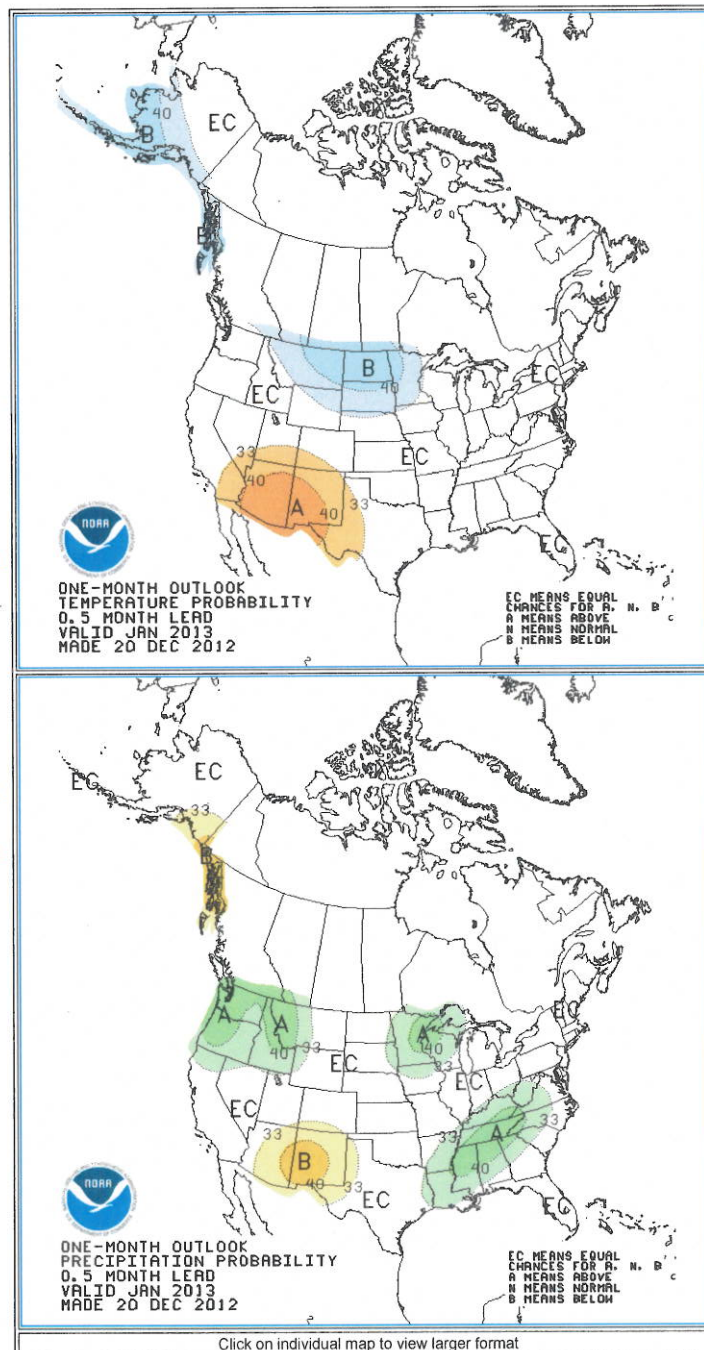
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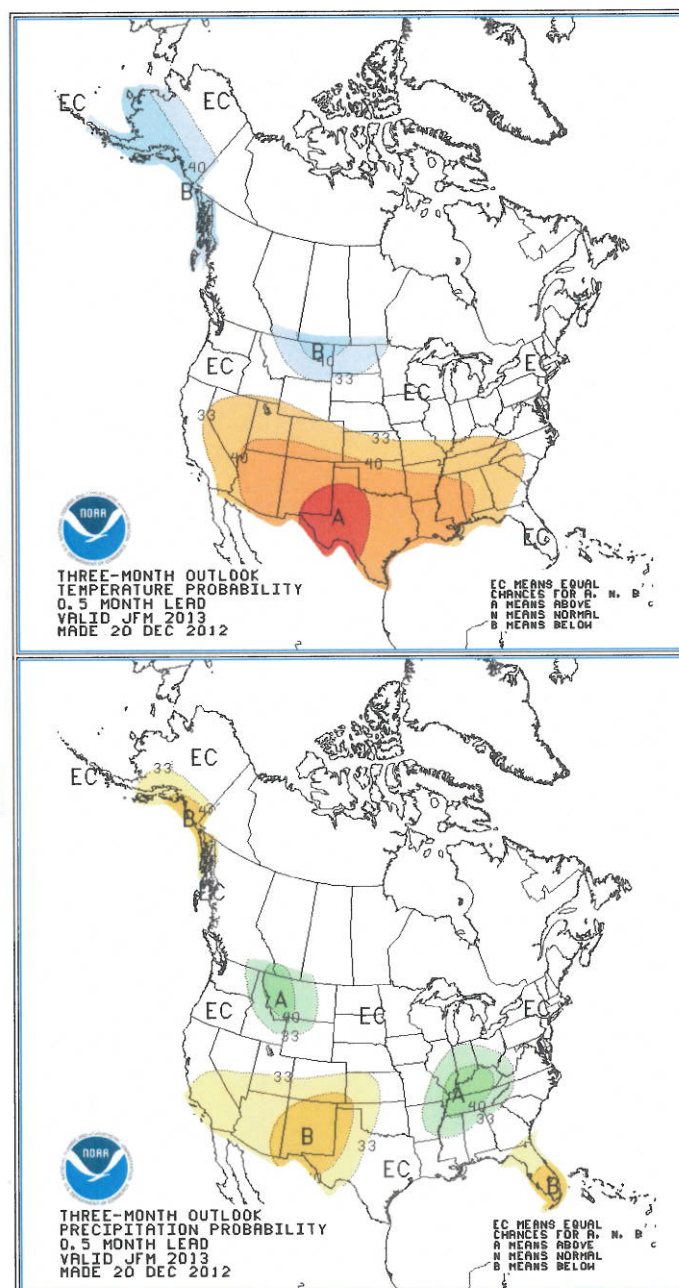
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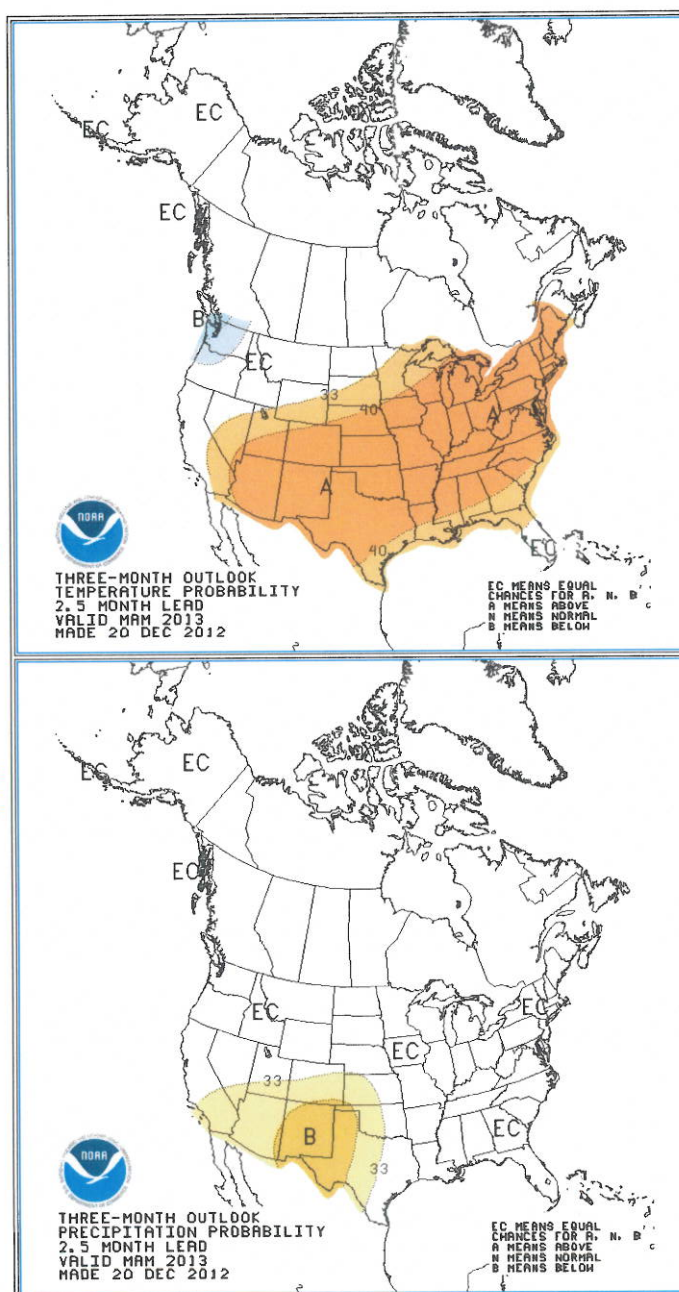
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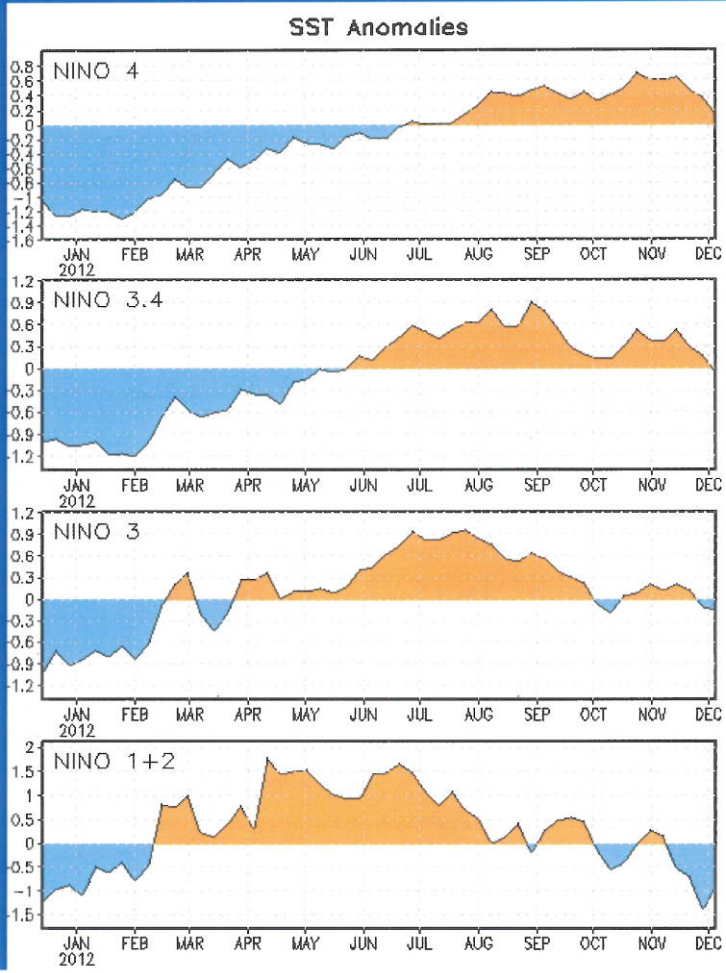
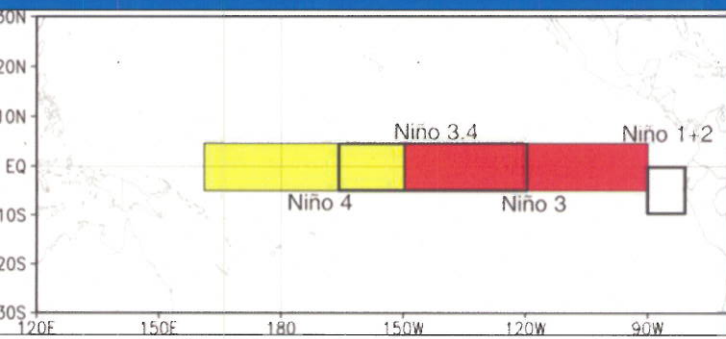




Niño Region SST Departures (°C) Recent Evolution

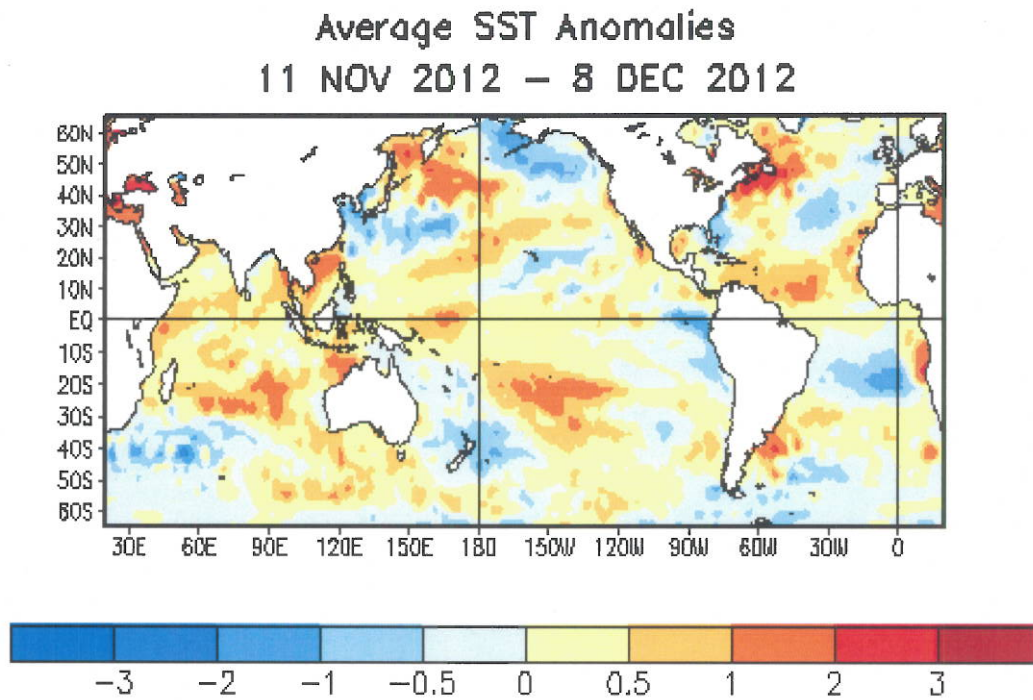
The latest weekly SST departures are:

Niño 4	0.1°C
Niño 3.4	-0.1°C
Niño 3	-0.2°C
Niño 1+2	-0.9°C





Global SST Departures (°C)



During the last four weeks, equatorial SSTs were above average across the western Pacific Ocean and the Indian Ocean.



Pacific Niño 3.4 SST Outlook

- Most models predict either persistence or a gradual weakening of current Niño-3.4 values, with ENSO-neutral continuing into the Northern Hemisphere summer 2013.
- The average dynamical model forecast is warmer than the statistical model mean.

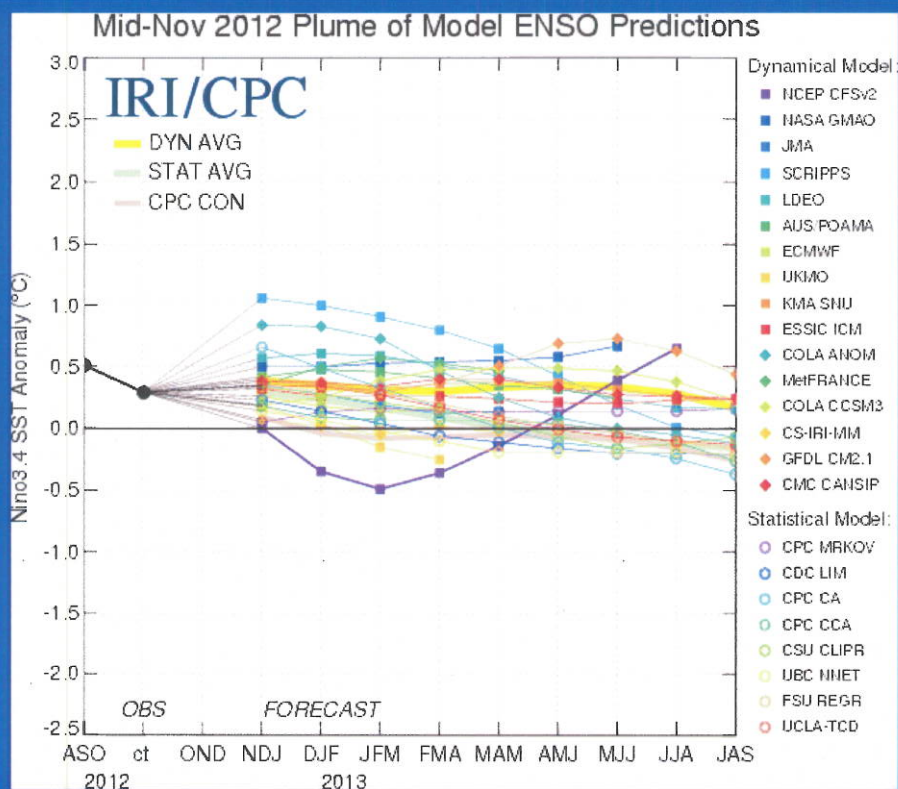
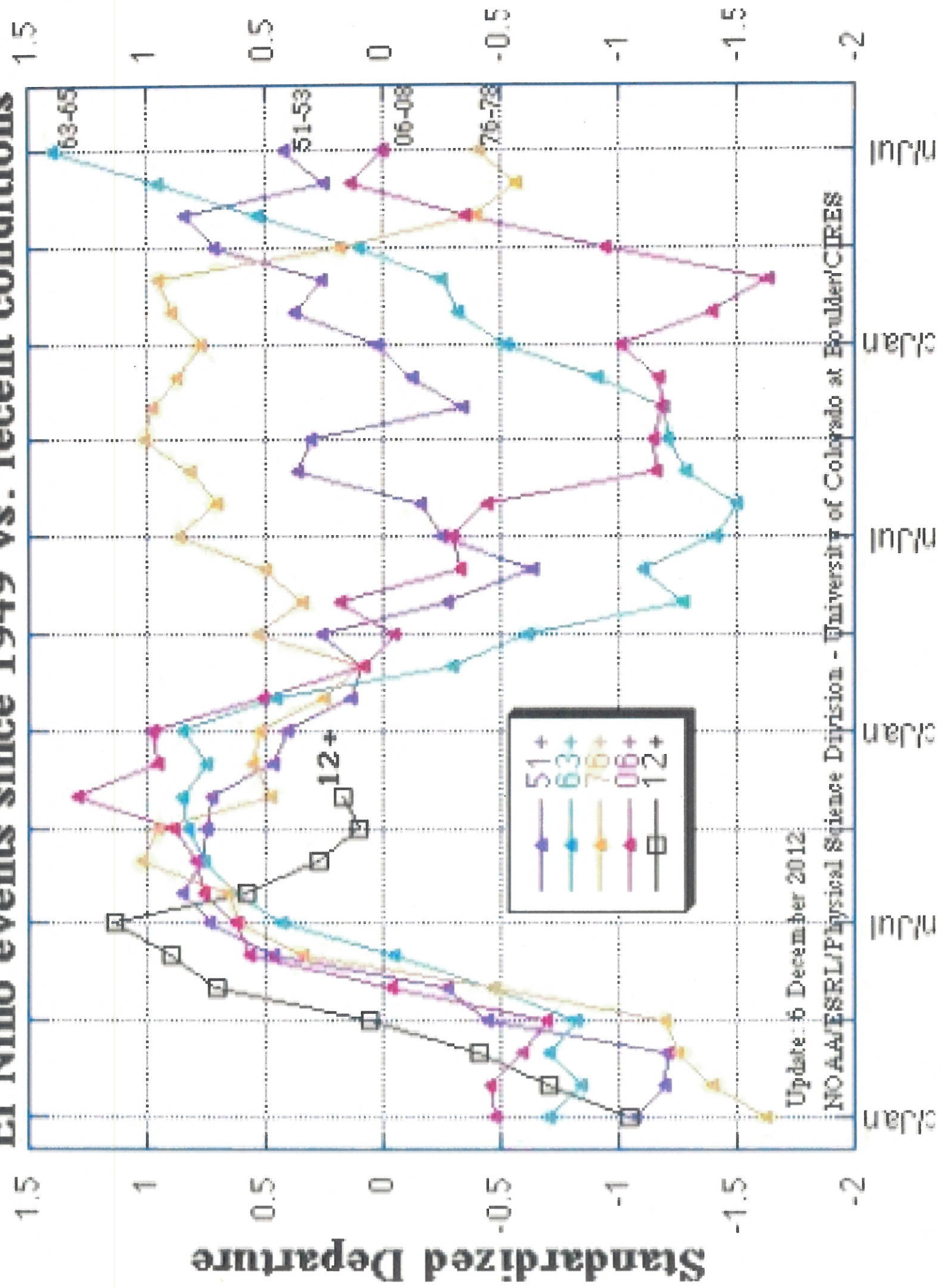


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 13 Nov 2012).

El Niño events since 1949 vs. recent conditions





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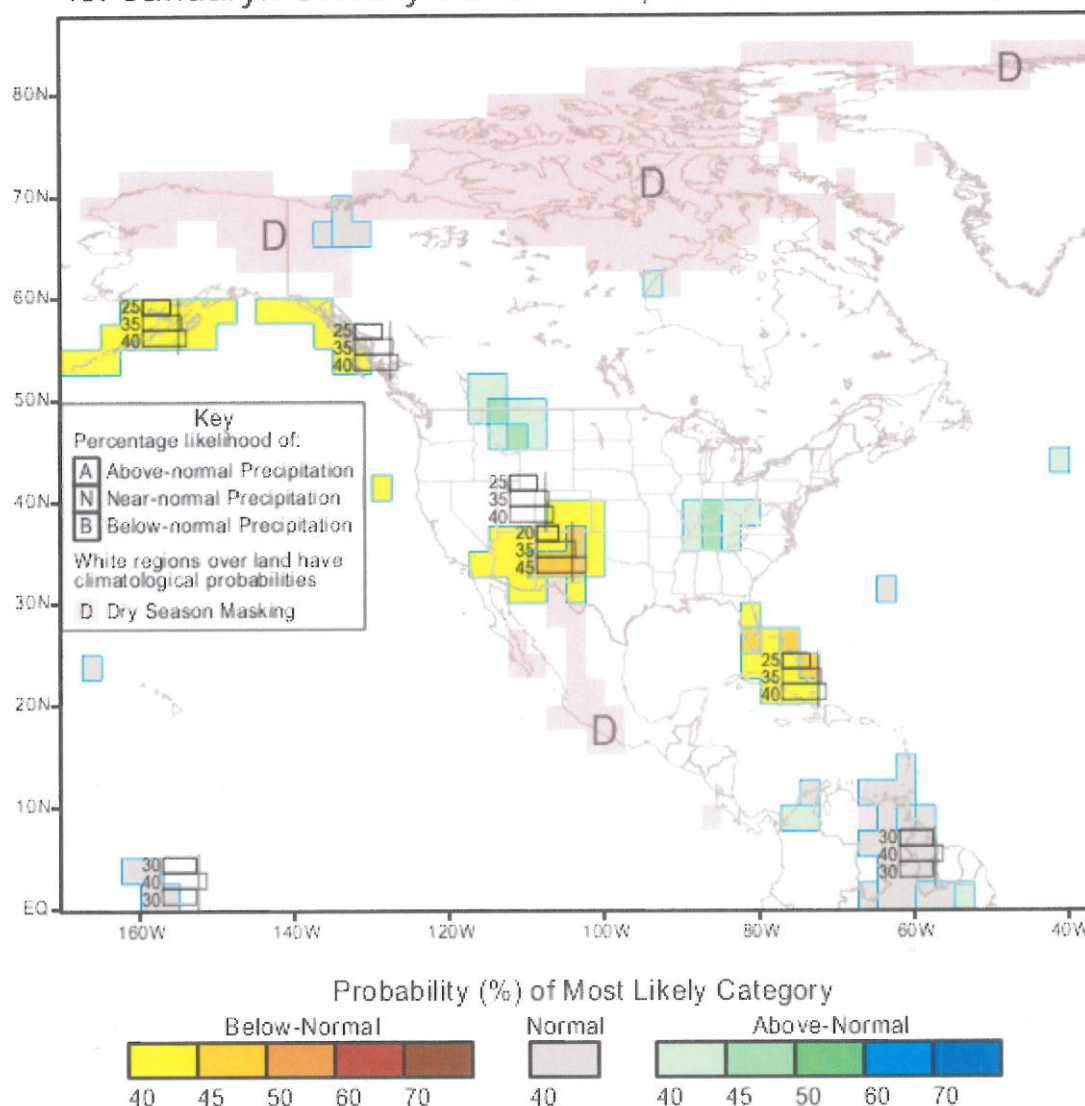
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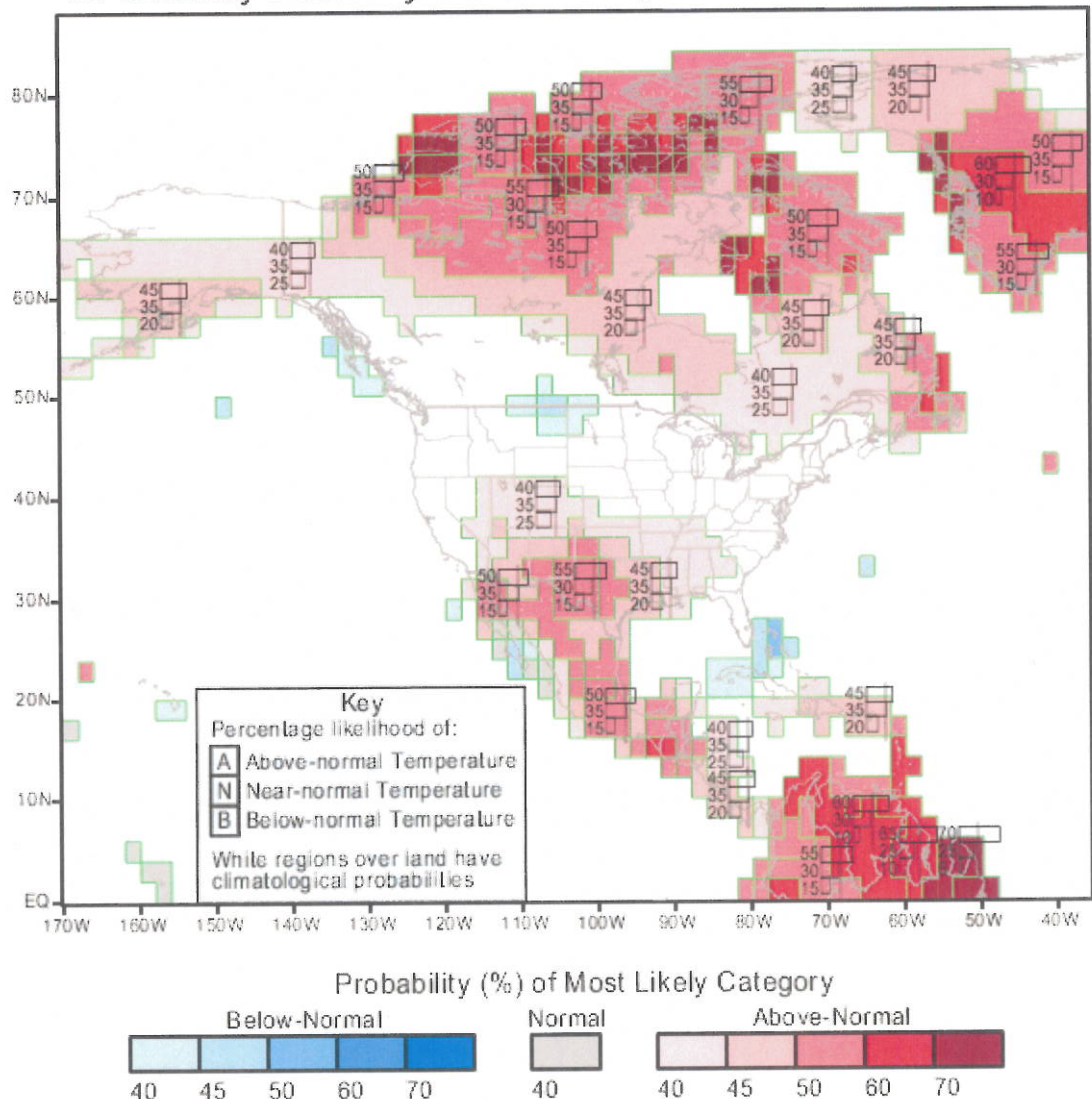
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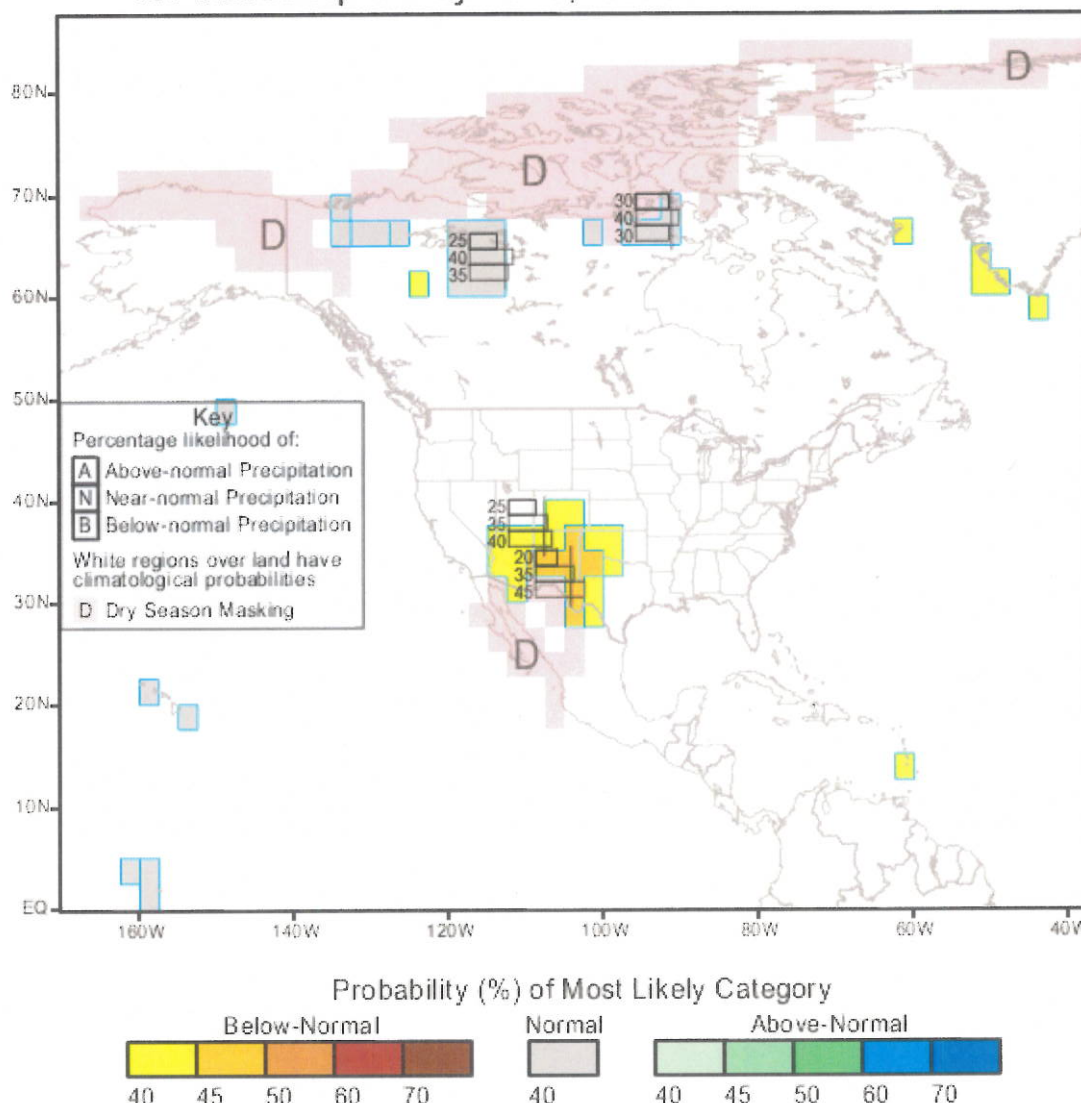
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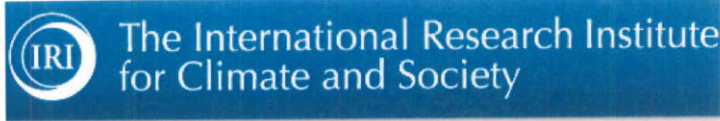
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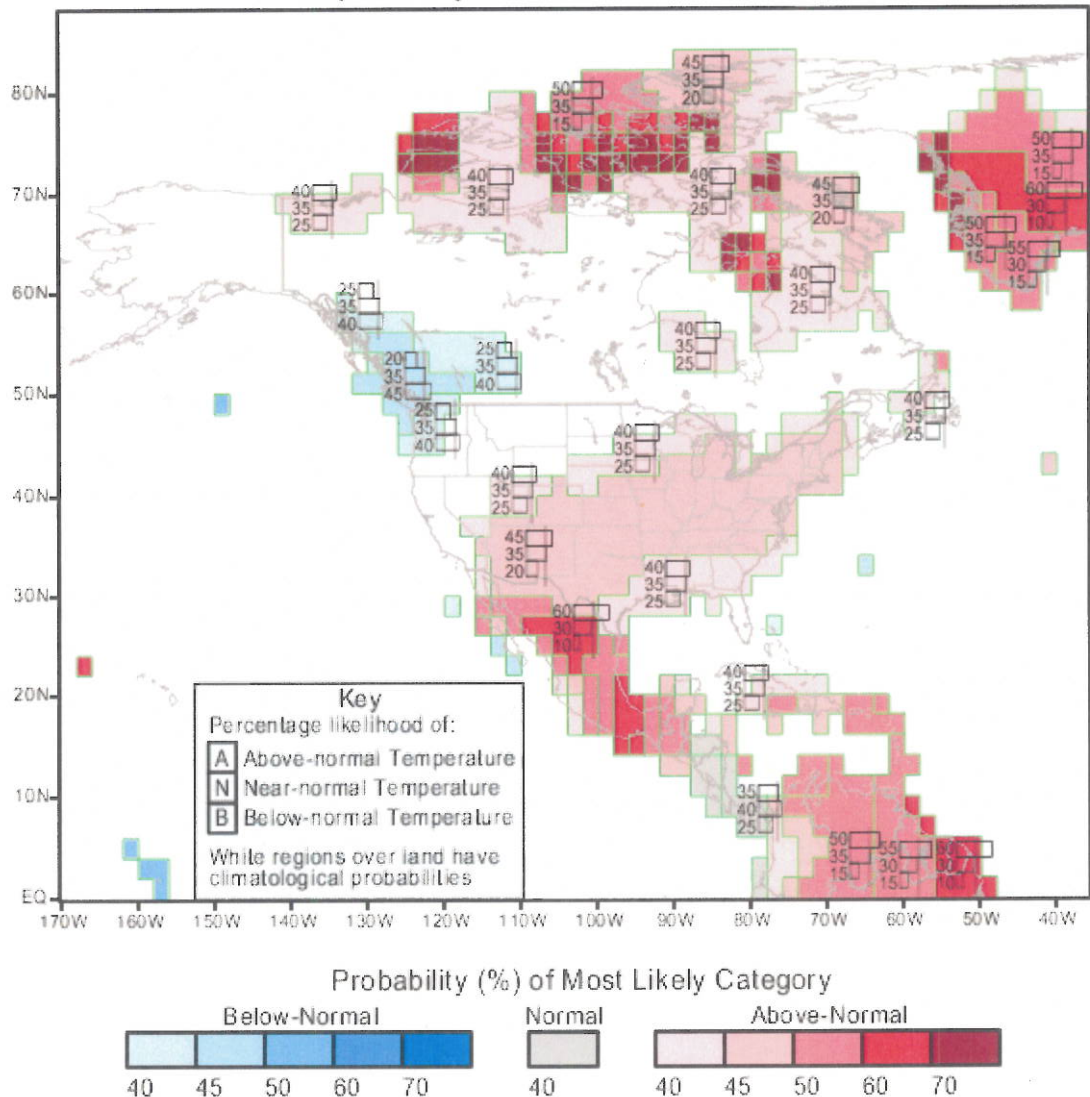
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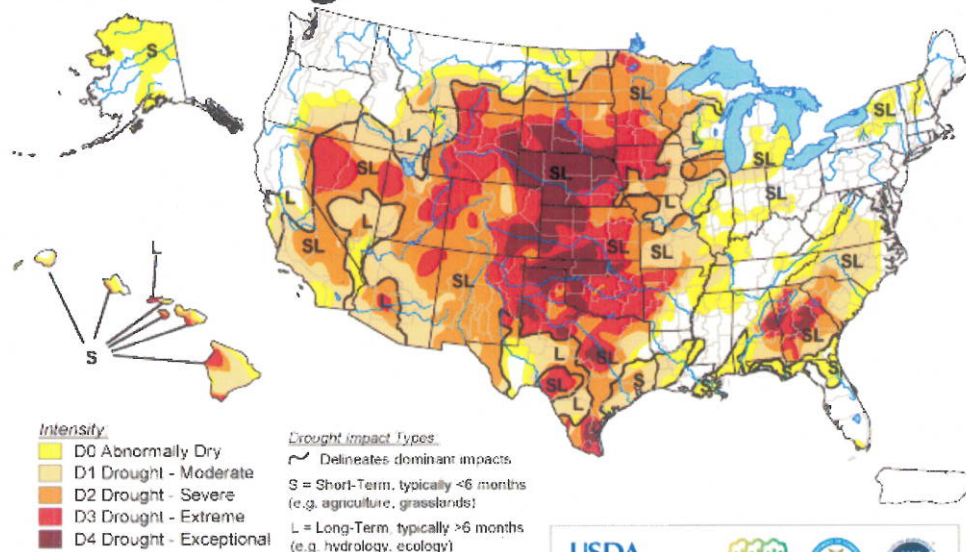
The data cutoff for Drought Monitor maps is Tuesday at 7 a.m. Eastern Standard Time. The maps, which are based on analysis of the data, are released each Thursday at 8:30 a.m. Eastern Time.

NOTE: To view regional drought conditions, click on map below. State maps can be accessed from regional maps.

U.S. Drought Monitor

December 18, 2012

Valid 7 a.m. EST



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, December 20, 2012

Author: Brian Fuchs, National Drought Mitigation Center

The U.S. Drought Monitor is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration.

UPDATE: The links have been moved into the menu bars below.

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NDMC's Drought Impact Reporter



6-week animation



12-week animation



Custom DM animation



short-term drought indicator blends



long-term drought indicator blends



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For local details and impacts, please contact your [State Climatologist](#) or [Regional Climate Center](#).

National Drought Summary -- December 18, 2012

The discussion in the Looking Ahead section is simply a description of what the official national guidance from the National Weather Service (NWS) National Centers for Environmental Prediction is depicting for current areas of dryness and drought. The NWS forecast products utilized include the HPC 5-day QPF and 5-day Mean Temperature probs, the 6-10 Day Outlooks of Temperature and Precipitation Probability, and the 8-14 Day Outlooks of Temperature and Precipitation Probability, valid as of late Wednesday afternoon of the USDM release week. The NWS forecast web page used for this section is: <http://www.cpc.ncep.noaa.gov/products/forecasts/>.

Over the last 7 days, much of the eastern United States has received some precipitation, with the greatest amounts at the end of the period over portions of Louisiana, Mississippi, Alabama and Georgia, where up to 3 inches of rain was recorded. Portions of the central Plains and Midwest recorded light precipitation from Nebraska and Iowa into South Dakota, Minnesota and Wisconsin, where amounts were generally less than 1 inch and most fell on unfrozen soils. This allowed for good infiltration into the top layers of the profile. An active pattern continued in the Pacific Northwest, where precipitation amounts of 2 to 4 inches were common along the coast and several feet of snow fell in the upper elevations. Central Arizona also received some good rain over several days with amounts from 1.5 to 3 inches.

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